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Cancer patients' rehabilitation needs and their fulfillment status

Salih Karatlı[1], Safiye Kübra Çetindağ Karatlı[2], Keziban Koçyiğit[3], Engin Eren Kavak[1], Songül Keskin Kavak[4]

[1]Department of Medical Oncology, Ankara Etlik City Hospital, Ankara, Turkiye
[2]Department of Family Medicine, Gülhane Training and Research Hospital, University of Health Sciences, Ankara, Turkiye
[3]Department of Physical Therapy and Rehabilitation, Ankara Etlik City Hospital, Ankara, Turkiye
[4]Department of Physical Therapy and Rehabilitation, Ankara Gaziler Physical Therapy and Rehabilitation Training and Research Hospital, Ankara, Turkiye

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ABSTRACT

Aims: Advances in cancer treatment have improved patients' survival rates; however, longer survival brings physical and psychosocial challenges. Cancer rehabilitation aims to mitigate these issues, preserving functionality and quality of life. This study aimed to evaluate the rehabilitation needs of oncology inpatients and the extent to which these needs are met, thereby raising awareness.

Methods: This cross-sectional, single-center study included 200 inpatients from the medical oncology service who voluntarily participated. A literature-based questionnaire was administered to assess patients' demographic and clinical characteristics, physical activity levels, and symptoms that may require rehabilitation. Performance status was determined using the Eastern Cooperative Oncology Group (ECOG) scale. Electronic patient records were reviewed to identify those who received a physical therapy and rehabilitation (PTR) consultation. The characteristics of patients who received and did not receive PTR consultation were statistically compared ($p<0.05$ significance level).

Results: The median age of the study participants was 61 years, with 59% being male. The most common symptoms requiring rehabilitation were fatigue (86%), pain (35%), and ambulation difficulty (32.5%). ECOG performance score was 2 and above in 41.5% of the patients. Only 27 patients (13.5%) received PTR consultation. Patients who received PTR consultation had significantly higher ECOG scores ($p<0.001$), higher rates of metastatic disease ($p=0.047$), and lower rates of independent feeding ($p<0.001$).

Conclusion: Although symptoms such as fatigue, pain, and mobility issues that require rehabilitation are common among oncology patients, referral rates to PTR clinics and access to rehabilitation services remain low. Identifying and addressing these needs is crucial for improving patient outcomes. Therefore, increasing awareness and strengthening collaboration between oncology and rehabilitation clinics is essential.

Keywords: Cancer, oncology, physical therapy and rehabilitation, consultation

INTRODUCTION

According to data from the International Agency for Research on Cancer (IARC), approximately 19.3 million new cancer cases were diagnosed worldwide in 2020, and 10 million deaths occurred due to cancer.[1] Advances in cancer diagnosis and treatment, along with developments in therapeutic approaches, have led to significant improvements in patient survival rates. However, prolonged survival increases the frequency of various physical and emotional problems arising from both the malignant disease itself and the treatment modalities used. These issues negatively affect patients' participation in daily activities, social relationships, and overall quality of life.[2,3]

Cancer rehabilitation aims to help patients overcome physical, social, psychological, and occupational limitations caused by the disease and treatment process, serving as a crucial component in improving functionality and quality of life during survival. Literature highlights the necessity of integrating oncological rehabilitation into the cancer care process and emphasizes the need to expand these services.[4,5] Despite the growing awareness that cancer rehabilitation is a fundamental aspect of oncological treatment, its clinical practice remains inadequate. This global deficiency, considering the increasing cancer incidence and prolonged survival, has the potential to cause significant public health

Corresponding Author: Salih Karatlı, karatlisalih@hotmail.com

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problems in the long run. Furthermore, the number of cancer survivors worldwide is expected to double in the coming years, making the expansion of oncological rehabilitation services and their effective integration into healthcare systems a priority.[6]

The World Health Organization (WHO) launched the "Rehabilitation 2030" initiative in 2017 to enhance global access to high-quality rehabilitation services for individuals with non-communicable diseases. This initiative aims to strengthen healthcare systems in terms of rehabilitation services and make these services more accessible through a comprehensive rehabilitation intervention package. Given the short- and long-term effects of cancer and its treatment, WHO has identified oncological rehabilitation as a priority area within this initiative. This underscores the importance of integrating oncological rehabilitation into healthcare systems to maintain functionality and improve quality of life for cancer patients.[6]

This study aimed to analyze the rehabilitation needs and fulfillment status of inpatients in the oncology clinic and to raise awareness based on the results.

METHODS

Ethics

This study was approved by the Scientific Researches Evaluation and Ethics Committee of Ankara Etlik City Hospital (Date: 08.01.2025, Decision No: AEŞH-BADEK-2024-1244). Following ethics approval, the study was conducted from February 1, 2025, among 200 inpatients at the Medical Oncology Service of Ankara Etlik City Hospital who consented to participate by completing the prepared questionnaire. This cross-sectional, single-center study was conducted following the Helsinki Declaration and relevant ethical principles.

Data Collection Process

A standardized questionnaire, developed based on literature reviews, was used to assess patients' demographic and clinical characteristics, physical activity levels, and rehabilitation needs. This questionnaire included common symptoms in cancer patients that may require rehabilitation, such as pain, mobility issues, bowel and bladder dysfunction. Patients' physical performance levels were evaluated using the Eastern Cooperative Oncology Group (ECOG) performance scale, and ECOG scores were recorded based on self-reported information and face-to-face clinical evaluations. Volunteer patients participating in the study were assessed by a physical therapy and rehabilitation (PTR) specialist during the questionnaire administration.

During hospitalization, electronic medical records were reviewed to determine whether patients had been assessed by the PTR clinic (whether PTR consultation was requested). Patients who received PTR consultation were compared with those who did not in terms of demographic and clinical characteristics.

Inclusion Criteria

Inpatients aged 18 years and older in the Oncology Clinic of Ankara Etlik City Hospital who agreed to participate by signing the informed consent form.

Exclusion Criteria

Patients who refused to sign the informed consent form or who were unable to answer the questionnaire due to physical or mental conditions.

Statistical Analysis

Descriptive statistical methods were used to analyze patients' demographic and clinical characteristics. Differences between patients who received and did not receive PTR consultation were assessed using appropriate statistical tests. Relationships between ECOG scores and other parameters with PTR consultation were analyzed, with a statistical significance level set at $p<0.05$.

Sample Size Justification

A priori power analysis was conducted using G*power 3.1.9.7 software. With Cohen's $d=0.5$, $\alpha=0.05$, and $1-\beta=0.80$, the minimum required sample size was calculated as 190 patients. Since our study included 200 patients, the sample size was deemed statistically sufficient.

RESULTS

200 patients were included in the study, with a median age of 61 years (19-92); and 59% of the participants were male, while 41% were female. 64.5% of the study group was at the metastatic disease stage, and 49% had been diagnosed with malignancy within the last six months. Regarding the primary tumor localization, the most common malignancies were determined as lung cancer (21%), gastric cancer (15.5%), and pancreatic cancer (12%), respectively. In terms of comorbidities, 29.5% of patients had hypertension, while 23% had diabetes. Regarding medication use, 61% of the patients were using fewer than three medications. Continuation of oncological treatment (chemotherapy or radiotherapy), infection-related conditions, and electrolyte imbalances were identified as the three most common reasons for hospitalization. The demographic and clinical characteristics of the patients are summarized in **Table 1a**.

In the patients' subjective assessments of physical activity and performance status, 51% described themselves as active, 35.5% as limited, and 13.5% as completely dependent. ECOG performance score was 2 and above in 41.5% of the patients, and 59% were receiving enteral or parenteral nutritional support. Data on nutritional status, physical activity, and performance levels are summarized in **Table 1b**.

In hospitalized oncology patients, the presence of common symptoms that may require rehabilitation was systematically evaluated in accordance with the literature. Fatigue was detected in 86% of the patients, pain in 35%, and ambulation difficulties in 32.5%. Although less frequently, bowel dysfunction (27%), bladder dysfunction (23%), neurological symptoms (17.5%), and swallowing dysfunction (17%) were also reported. The distribution of symptoms that may require rehabilitation is presented in **Table 2**.

Among the 200 patients evaluated in the study, only 55 were able to engage in regular walking and exercise. Patients were divided into two groups: those who were consulted for PTR and those who were not. A total of 27 patients received a PTR consultation. When comparing patients with and without

Table 1a. Demographic and clinical characteristics of patients

Age median (range) year	61.0 (19.0-92.0)
Sex no (%)	
Male	118 (59.0)
Female	82 (41.0)
Primary tumor site, no (%)	
Lung	42 (21.0)
Breast	14 (7.0)
Pancreas	24 (12.0)
Gastric	31 (15.5)
Colorectal	19 (9.5)
Sarcoma	10 (5.0)
Prostate	3 (1.5)
Bladder	5 (2.5)
Colangiocarcinoma	6 (3.0)
Gynecological	22 (11.0)
Head&neck	14 (7.0)
Others	10 (5.0)
Stage no (%)	
Non-metastatic	71 (35.5)
Metastatic	129 (64.5)
Duration of malignancy no (%)	
<6 months	98 (49.0)
6-12 month	46 (23.0)
>12 months	56 (28.0)
Comorbidity no (%)	
Hypertension	59 (29.5)
Diabetes mellitus	46 (23.0)
Coronary artery disease	30 (15.0)
Cerebrovascular disease	12 (6.0)
Asthma/COPD	20 (10.0)
Other	33 (16.5)
Number of medications used no (%)	
<3	122/61.0)
≥3	78 (39.0)
Cause of hospitalization, no (%)	
Infection	35 (17.5)
Oncological treatment continued	57 (28.5)
Electrolyte imbalace	26 (13.0)
Blood transfusion	12 (6.0)
Palliative care	35 (17.5)
Interventional procedures	35 (17.5)

PTR: Physical therapy and rehabilitation COPD: Chronic obstructive pulmonary disease

Table 1b. Nutritional status and physical condition of patients

Nutritional status no (%)	
Independent	82 (41.0)
Enteral nutrition	77 (38.5)
Total parenteral nutrition	39 (19.5)
PEG/PEJ	2 (1.0)
How does one define oneself physiologically? no (%)	
Active	102 (51.0)
Limited	71 (35.5)
Immobile	27 (13.5)
ECOG PS no (%)	
0	20 (10.0)
1	97 (48.5)
2	46 (23.0)
3	21 (10.5)
4	16 (8.0)
Ability to walk & exercise no (%)	
Yes	55 (27.5)
No	145 (72.5)

PEG: Percutaneous enterogastrostomy, PEJ: Percutaneous enterojejunostomy, ECOG PS: Eastern cooperative oncology group performance status

PTR consultation, it was found that the mean age of those who received a consultation was higher (p=0.002), the proportion of those in the metastatic stage was higher (p=0.047), and the rate of independent nutrition (patients not receiving enteral or parenteral nutritional support) was lower (p<0.001). Additionally, the rate of PTR consultation was significantly higher in patients with a higher ECOG performance score (p<0.001). Furthermore, impaired walking and exercise capacity was significantly associated with PTR consultation (p=0.039). These findings are summarized in Tables 3a, 3b.

Table 2. Distribution of symptoms that may require rehabilitation (%)

Fatigue	
Yes	172 (86.0)
No	28 (14.0)
Pain	
Yes	70 (35.0)
No	130 (65.0)
Imbalance during ambulation	
Yes	65 (32.5)
No	135 (67.5)
Bowel dysfunction	
Yes	54 (27.0)
No	146 (73.0)
Bladder dysfunction	
Yes	46 (23.0)
No	154 (77.0)
Neurological symptoms	
Yes	35 (17.5)
No	165 (82.5)
Swallowing dysfunction	
Yes	34 (17.0)
No	166 (83.0)

Table 3a. Demographic and clinical characteristics of patients with and without PTR consultation

	Without PTR consultation (n=173)	With PTR consultation (n=27)	p value*
Age median(range) year	61.0 (20.0-92.0)	58.0 (19.0-72.0)	0.255
Sex no (%)			
Male	108 (91.5)	10 (8.5)	0.037
Female	64 (79.0)	18 (21.0)	
Primary no (%)			
Lung	35 (83.3)	7 (16.7)	
Breast	12 (85.7)	2 (14.3)	
Pancreas	22 (91.7)	2 (8.3)	
Gastric	28 (90.3)	3 (9.7)	
Colorectal	15 (78.9)	4 (21.1)	
Sarcoma	10 (100.0)	0 (0.0)	0.140
Prostate	3 (100.0)	0 (0.0)	
Bladder	4 (80.0)	1 (20.0)	
Colangiocarcinoma	5 (83.3)	1 (16.7)	
Gynecological	20 (90.9)	2 (9.1)	
Head&neck	12 (85.7)	2 (14.3)	
Others	6 (60.0%)	4 (40.0%)	
Stage no (%)			
Non-metastatic	66 (93.0)	5 (7.0)	0.047
Metastatic	107 (82.9)	22 (17.1)	
Duration of malignancy no (%)			
<6 months	86 (87.8)	12 (12.2)	0.518
6-12 month	41 (89.1)	5 (10.9)	
>12 months	46 (82.1)	10 (17.9)	

*Pearson Chi-square, PTR: Physical therapy and rehabilitation

DISCUSSION

In cancer patients, various symptoms arise due to both the disease itself and the medical treatments applied. Pain, fatigue, exhaustion, constipation and bowel dysfunction, gait and balance disorders, neuropathy, and bladder dysfunction are among the common symptoms that negatively impact patients' quality of life, lead to a decrease in functional capacity, and create a need for rehabilitation.[7-10] In our study, fatigue, pain, and ambulation problems were also observed at high rates in patients.

Physical activity contributes to improving the quality of life in oncology patients by supporting the treatment process. In the literature, systematic reviews have demonstrated that physical activity is effective in alleviating cancer-related symptoms.[11] In a study conducted by Mikkelsen et al.[12], it was

Table 3b. Nutritional status and physical activities of patients with and without PTR consultation

	Without PTR consultation (n=173)	With PTR consultation (n=27)	p value*
How does one define oneself physiologically? no (%)			
Active	100 (98.0)	2 (2.0)	<0.001
Limited	57 (80.3)	14 (19.7)	
Immobile	16 (59.3)	11 (40.7)	
Cause for hospitalization no (%)			
Infection	31 (88.6)	4 (11.4)	
Oncological treatment continued	53 (93.0)	4 (7.0)	0.019
Electrolyte imbalace	17 (65.4)	9 (34.6)	
Blood transfusion	11 (91.7)	1 (8.3)	
Palliative care	29 (82.9)	6 (17.1)	
Interventional procedures	32 (91.4)	3 (8.6)	
ECOG PS no (%)			
0	20 (100.0)	0 (0.0)	
1	95 (97.7)	2 (2.1)	<0.001
2	37 (80.4)	9 (19.6)	
3	12 (57.1)	9 (42.9)	
4	9 (56.3)	7 (43.8)	
Ability to walk & exercise no (%)			0.039
Yes	52 (94.5)	3 (5.5)	
No	121 (83.3)	24 (16.7)	

*Pearson Chi-square, PTR: Physical therapy and rehabilitation, PEG: Percutaneous enterogastrostomy, PEJ: Percutaneous enterojejunostomy, ECOG PS: Eastern cooperative oncology group performance status

reported that physical activity reduces cancer-related fatigue, has positive effects on psychological well-being, and decreases musculoskeletal losses. In this context, assessing the physical condition of hospitalized oncology patients and ensuring their access to appropriate rehabilitation services is of great importance. In our study, it was found that the consultation rate to the PTR clinic was significantly higher in patients with a high ECOG performance score (p<0.001); however, it was also observed that a large proportion of patients with physical activity deficiencies were unable to benefit from rehabilitation services. Current clinical guidelines emphasize the critical role of rehabilitation services in symptom management for cancer patients.

There are various studies in the literature evaluating the rehabilitation needs of oncology patients and the extent to which these needs are met. In a study conducted by Lehmann et al.[14], 805 cancer patients were evaluated, and it was determined that 35% had weakness, 25% had ambulation problems, and 7% had communication issues. Additionally, it was stated that rehabilitation needs were not adequately met. In another study conducted by Gerber et al.[15], it was reported that only 16% of medical oncology inpatients were referred to the PTR clinic and received rehabilitation services at the time of discharge, while the majority were unable to access these services. In our study, it was found that symptoms requiring rehabilitation were prevalent among hospitalized oncology patients, but the proportion of patients who identified themselves as active and engaged in exercise was low. Although 41.5% of patients had an ECOG performance score of ≥2, only 27 patients were referred for PTR consultation. In this regard, oncology teams need to be further informed about the positive effects of physical activity and rehabilitation on patients, and awareness in this field should be increased.

There are various studies in the literature evaluating the effectiveness of oncological rehabilitation. In a study conducted by Marciniak et al.[16] on 159 cancer patients, it was reported that cancer rehabilitation contributed to patients' functional gains. In a study by Fernandes et al.[8] in 2023, it was shown that multimodal physical exercise and functional rehabilitation programs were effective in alleviating cancer-related fatigue symptoms. In the study by Cole et al.[17], rehabilitation programs were found to result in significant improvements in patients' cognitive and motor functions.

Limitations

Considering that rehabilitation needs may vary depending on cancer types, our study did not include a detailed grouping and analysis of symptoms based on cancer types. Furthermore, the clinical outcomes and feedback of patients who received rehabilitation services were not reported, which limited the assessment of the effectiveness of these services. Although physical activity levels were evaluated using the ECOG performance score, it would be beneficial to support this with other methods for a more comprehensive and objective analysis. Additionally, since the study was conducted in a single center with a limited number of patients, the generalizability of the results is a significant limitation. These factors constitute the primary limitations of our study. Taking these limitations into account, it is important to plan future studies that include larger patient populations, grouped according to cancer types and stages, in a multicenter setting. Such studies would allow for a more detailed assessment of rehabilitation needs and a more comprehensive evaluation of the clinical effectiveness of the services provided.

CONCLUSION

In conclusion, it was determined that inpatients in the oncology clinic experience high rates of symptoms that negatively impact quality of life and disrupt functional integrity, such as cancer-related fatigue, pain, ambulation problems, and bladder and bowel dysfunction. However, it was also found that referral rates to PTR clinics and rehabilitation service utilization rates were quite low in these patients. Identifying and addressing these needs and improving patient outcomes require increasing awareness and strengthening collaboration between oncology and rehabilitation clinics, which is of critical importance.

ETHICAL DECLARATIONS

Ethics Committee Approval

This study was approved by the Scientific Researches Evaluation and Ethics Committee of Ankara Etlik City Hospital (Date: 08.01.2025, Decision No: AEŞH-BADEK-2024-1244).

Informed Consent

All patients freely and voluntarily signed an informed consent form.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

The authors declared that this study has received no financial support.

Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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